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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/769,699	02/02/2004	Edgar R. Zuniga-Ortiz	33535.1	8605

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EXAMINER	
PHAM, HOAI V	

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 07/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/769,699	ZUNIGA-ORTIZ ET AL.	
	Examiner	Art Unit	
	Hoai v. Pham	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *27-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 28-30 are objected to because of the following informalities:

Line 3, "a second of said at least one added conductive layer" should be changed to -- a second of at least one added conductive layer-- for clarifying the scope of the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 27-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 31, the limitation "aligning said **added metallization** and said **board pads** so that each of said contact pads are connected to a corresponding **board terminal pad**; and metallurgically bonding **said chip metallization** and **said board pads** without melting said outer surface of said added conductive layer" renders the claim indefinite. It is not clear where "the distribution of said contact pads", "said added metallization", "said board pads", "board terminal pad" and "said chip metallization" come from.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 27-28 and 30-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamazaki et al. [U.S. Pat. 6,709,901] previously applied.

With respect to claim 31, as best understood, Yamazaki et al. discloses (fig. 10B, cols. 10-11) a method for fabricating a semiconductor assembly comprising the step of:

providing a semiconductor chip (220) having a planar active surface including an integrated circuit, said integrated circuit having metallization patterns including a plurality of contact pads (221) at said planar active surface,

providing a protective overcoat (222) over said planar active surface, said protective overcoat including windows exposing said plurality of contact pads, said windows having sidewalls;

providing an added conductive region (230) having at least one conductive layer (230) on said metallization pattern, wherein said added conductive layer (230) covering and comformal to each of said contact pads, said sidewalls of said windows and a portion of said protective overcoat surrounding said windows, **a portion of** said added

conductive layer (230) having a planar outer surface, wherein said outer surface of said added conductive layer suitable to form metallurgical bonds without melting;

providing an assembly board (224) having a plurality of planar, metallurgically bondable terminal pads (225) in a distribution aligned with the distribution of said contact pads (221);

aligning said semiconductor chip (220) and assembly board (224) so that each of said contact pads (221) is connected to said bondable terminal pads (225); and

metallurgically bonding said semiconductor chip (220) and said assembly board (224) without melting said outer surface of said added conductive layer (225) (fig. 10b).

With respect to claims 27 and 28, Yamazaki et al. discloses that wherein said step of depositing said at least one added conductive region (230) by electroless plating (col. 11, lines 8-9). It is noted that, as interpreting the claim in a broad scope, the at least one conductive layer can also be the same as a second of at least one added conductive layer because the claim does not recite the different material between the at least one conductive layer and the second of at least one added conductive layer.

With respect to claim 30, Yamazaki et al. (fig. 10C) discloses that wherein said step of fabricating a planar outer surface of said added conductive layer comprises the step of depositing a second of at least one added conductive layer by using the method of support by islands (222) of protective overcoat. It is noted that, as interpreting the claim in a broad scope, the at least one conductive layer can also be the same as a

second of at least one added conductive layer because the claim does not recite the different material between the at least one conductive layer and the second of at least one added conductive layer.

With respect to claim 32, Yamazaki et al. discloses that where in said bonding comprises direct welding by metallic interdiffusion (col. 11, lines 5-15).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. [U.S. Pat. 6,709,901] previously applied, in view of Akram et al. [U.S. Pat. 6,617,687] previously applied.

Yamazaki et al. substantially discloses all the limitations as claimed above. Yamazaki et al. also discloses the step of depositing said at least one added conductive layer (230) by electroless plating. Yamazaki et al. does not explitcitly teach the step of depositing a second of at least one added conductive layer (230) by screen printing. It is noted that, as interpreting the claim in a broad scope, the at least one conductive layer can also be the same as a second of at least one added conductive layer because the claim does not recite the different material between the at least one conductive layer and the second of at least one added conductive layer. However, Akram et al. discloses electroless plating, screen printing ..et. are known technique to depositing the conductive layer (66) (col. 11, lines 17-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the known technique such as screen printing as taught by, Akram et al. into the process of Yamazaki et al. to form conductive layer.

Response to Arguments

9. Applicant's arguments filed 05/01/2006 have been fully considered but they are not persuasive.

Applicant argues that no such feature (providing an added conductive region on said metallization pattern covering and comformal to each of said contact pads, said

sidewalls of said windows and a portion of said protective overcoat surrounding said windows, said added conductive layer having a planar outer surface, wherein said outer surface of said added conductive layer suitable to form metallurgical bonds without melting; depositing the added conductive region by electroless plating; and fabricating a planar outer surface of said added conductive layer comprises the step of depositing a second of at least one added conductive layer by using the method of support by islands of protective overcoat) is found in Yamazaki et al.

Applicant's argument is not persuasive because Yamazaki et al. clearly discloses said added conductive region (230) on said metallization pattern covering and comformal to each of said contact pads, said sidewalls of said windows and a portion of said protective overcoat surrounding said windows, a portion of said added conductive layer (230) having a planar outer surface, wherein said outer surface of said added conductive layer (230) suitable to form metallurgical bonds without melting (see fig. 10B). The added conductive layer (230) formed by gold as the same material with the invention. It is noted that the discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer. Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). Also, figure 10B shows a gold bumps (230) having a planar outer surface and contacts a layer (229) without melting the gold bumps (230) by

using compression force method (see col. 11, lines 5-15). Yamazaki et al. discloses that wherein said step of depositing said at least one added conductive layer (230) by electroless plating (col. 11, lines 8-9). Yamazaki et al. (fig. 10C) discloses that wherein said step of fabricating a planar outer surface of said added conductive layer (230) comprises the step of depositing said at least one added conductive layer by using the method of support by islands (222) of protective overcoat. Therefore, Yamazaki et al. meets and anticipates the claim.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

11. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai v. Pham whose telephone number is 571-272-1715. The examiner can normally be reached on M-F.

13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HOAI PHAM
PRIMARY EXAMINER